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INTRODUCTION

Yale’s two new residential colleges and the expected 800-student increase in the undergraduate population served as the impetus for YCC’s review of the Yale Shuttle System. We have determined areas for shuttle improvement related to both these new factors and persistent prior problems.

Specifically, students in the new colleges have expressed dissatisfaction with overcrowding on the Red Line. There is overwhelming interest among these students in adding a line specifically to replace the half-mile walk between Old Campus and the new colleges. To combat overcrowding, the Red Line shuttles should increase in size. In order to accommodate larger buses, the Red Line could shift its route to wider, more compatible streets throughout New Haven.

Additionally, STEM students have consistently voiced frustration in finding reliable nighttime transportation back to the central undergraduate campus. They cite issues with nighttime shuttles, including reliability and timeliness. A proper solution to this would include identifying peak times of need for STEM students and supplying more shuttles at these times.

On the whole, this report aims to examine the most pressing needs for the student body in regards to the shuttle system. The Fall 2017 Survey and YCC Focus Groups have indicated that students, on the whole, could benefit from adjustments to the shuttle routes that give more options to accommodate both students in STEM and students who live in the new residential colleges, Benjamin Franklin and Pauli Murray.

BACKGROUND

Students who wish to travel across campus without walking long distances often use the Yale Shuttle System, a network of shuttles and buses. Undergraduates are not the only beneficiaries of the shuttles; graduate and professional students, among others, are also clients. The shuttle system consists of a number of lines, but those most relevant to undergraduates’ transport are the Blue, Orange, and Red Line shuttle systems. The Blue Line serves the majority of students on campus, traveling up York Street and then College/Prospect Street past the School of Divinity. This shuttle then travels back down Whitney Avenue past the School of Management, turns onto Grove Street, and travels down College Street to the Medical School before repeating the loop. The Orange Line is very similar to the Blue Line, except it
travels up to the East Rock neighborhood and down Orange Street once passing the School of Divinity. Finally, the Red Line gives students access to the Arts District on Whitney Avenue, travels out to Science Park, and runs south on Prospect Street past Benjamin Franklin and Pauli Murray Colleges towards Union Station. This project aims to examine the positive and negative aspects of each shuttle route, as well as possible solutions for any issues the student body may have.

Historically speaking, the largest undergraduate usage of the Yale Shuttle System comes from students near Old Campus (such as at the original 12 residential colleges) to Science Hill, and then back later at night. However, usage has begun to change in the current academic year with the opening of Pauli Murray College and Benjamin Franklin College. The gradual addition of 800 more students from the 2016-17 year to the 2020-21 academic year will surely shift traffic on these shuttles with larger magnitude than we are seeing currently. Specifically, one can expect an increase in traffic on the Red Line shuttle for students in Pauli Murray and Benjamin Franklin Colleges to travel to Old Campus, Cross Campus, and buildings nearby.

**PEER INSTITUTIONS**

This report will describe the shuttle systems of Harvard, Princeton, and Stanford, three of Yale’s peer institutions. Each university has a slightly different system tailored to its individual needs, such as a very large campus (in the case of Harvard) or a lack of street access (Princeton). For this reason, some features of these schools' shuttle systems may not be applicable to our investigation.

Harvard has a three-line shuttle service that offers students transport from upperclassmen housing to the various parts of campus, as well as to the medical campus. As a whole, Harvard’s campus is more spread out, but the shuttle service is much more streamlined. Stops are effectively limited to upperclassman housing, select stops around the perimeter of Harvard Yard, and major clusters of buildings. At Harvard, the shuttle runs very efficiently, but at the cost of variety.

Princeton offers fewer services in terms of shuttles. Due to its campus’ limited street space, the extent of the shuttle system includes large loops to sports stadiums and facilities, the few residential halls that are further from the heart of campus, and the cluster of libraries on the northeast corner of campus. For this reason, Princeton’s shuttle system will always be limited.
Finally, Stanford’s shuttle system looks and feels very similar to that of Yale’s. Due to its campus having a solid amount of street space, their shuttle system is similar in expansiveness and timing to the Yale Shuttle service. However, the Stanford shuttle offers a greater number of lines that run with more frequency than Yale’s. For example: Stanford’s shuttle system offers a daily route to multiple shopping centers (e.g. - Walmart, the San Antonio Shopping Center (a mall), etc.) Given that Stanford has an endowment very similar to Yale’s, it seems feasible that Yale could offer more services of this sort (e.g. - routes to the CT Post Mall or the shops in North Haven).

Based on the information from peer institutions, we feel that Yale could benefit from adopting a Stanford-like model, keeping in mind the financial constraints of the Yale Parking and Transit organization. Currently, the longer Stanford routes to shopping centers only run from 3:00 PM to 10:00 PM, which makes sense, as students will be mostly done with classes at this point. With the other suggestions presented in this report, there exists a possibility to improve the shuttle system by using the smaller buses to run the longer routes (e.g. - using the small shuttle buses to run to shopping centers, using larger buses to run routes on Yale’s campus).

DATA ANALYSIS

Use of Shuttles/Popular Opinion

In the YCC Fall 2017 survey, respondents were first asked to rate their satisfaction with the Shuttle System as a whole. Overall, Yale College students were pleased with their experience; over half selected “Satisfied” or “Very Satisfied” and another 29% selected “Neutral.” However, after stratifying the data between residential colleges, a predictable trend occurs. There are large pockets of dissident from students from the following colleges, with the % of respondents “dissatisfied” or “very dissatisfied” in parentheses:

- Benjamin Franklin College (28.1%)
- Ezra Stiles College (28.6%)
- Pauli Murray College (29.6%)
- Timothy Dwight College (34.4%)

This initial view suggests that any colleges not immediately connected to the “center” of Yale’s campus are not being serviced as well by the Shuttle system; however, there are some anomalies in this conclusion. Morse College, right next to
Ezra Stiles College, had only 2.6% dissatisfaction in any form. Additionally, Silliman College, just across Temple Street from Timothy Dwight College, had only 10.9% total dissatisfaction with the Yale Shuttle System. This suggests one of two things. Either:

a) Students in Morse and Silliman have much different shuttle needs than their sister colleges, or:

b) There is no clear answer about satisfaction of these students.

Since there is no clear answer about the source of discrepancy between Ezra Stiles and Morse, or Timothy Dwight and Silliman, from this question alone, we asked further about levels of satisfaction regarding the routes offered during the day. Asking this question made resolving this much clearer: the only two colleges with significant levels of dissatisfaction were Pauli Murray College (32.6%) and Benjamin Franklin College (27.3%). When asked if students would use an additional route that runs specifically from the new colleges to Prospect Street, over 70% of all undergraduate students said “yes.” Every college surpassed the 60% “would use” threshold, with over 90% of students in both Pauli Murray College and Benjamin Franklin College saying that they would use it. Only one respondent between the two new colleges said that they would not use it.

**Nighttime Services**

The Fall 2017 Survey also inquired about the usage of nighttime shuttle services. Of respondents, about 36% of students said that they do not use the Yale Shuttles after 6 PM. Of the remaining respondents, almost 40% were dissatisfied with the Yale shuttle options after 6 PM, and 73% of respondents’ complaints concerned the infrequency of shuttle routes and the long routes necessary for students to arrive at their destination. The clear recommendation based on this data is to invest more heavily in the nighttime shuttle service. Looking at courses ending after 6 PM (specifically those on Science Hill) and how many students will be on the hill at each time is likely to be the best way to see when more shuttles and drivers are needed. One member of our focus group specifically cited that, after getting out of lab, she needed to wait for up to an hour to get a shuttle at night. Adding shuttles is not only a matter of convenience but also one of safety; Yale public safety officials discourage students from walking alone, particularly when it is dark. Running shuttles more frequently with more precise timing would lessen the burden on Yale
Security and the YPD, and it would provide students with greater peace of mind when traveling across campus.

**Blue and Orange Lines**

Currently, the Blue and Orange Lines run largely the same route, traveling together through the center of campus before splitting on Prospect Street (where the Orange Line travels to East Rock and comes down Orange Street, whereas the Blue Line continues up Prospect Street and comes down Whitney Avenue). Multiple members of our focus group noted the overlap between these two shuttle routes. In their experience, the Blue and Orange Lines often travel simultaneously through central campus, leaving one bus overcrowded and one bus nearly empty. In order to fix this issue, students had two suggestions: one, simply space out the shuttles more, and two, explore the possibility of changing the route of one of the lines to include new stops. In either case, there appears to be an inefficiency that could be remedied.

**Red Line**

One interesting result that was gathered from the members of our Focus Group and the Fall 2017 Survey is the importance of the Red Line for students in the new colleges. Currently, the Red Line offers the only route running southbound on Prospect Street, and it uses a smaller shuttle than both the Blue and Orange Lines. Of our respondents who have a reason to use the route, an overwhelming 71.4% agree that they would utilize an additional shuttle travelling this direction. Recently, the Yale Shuttle System instituted an additional Red Line during the day, which resulted in a shuttle arriving at each stop every 12 minutes. However, at peak hours in the morning and evening, the small shuttle bus is unable to meet student demand, and students are often left waiting for the next bus. One possible option to fix this problem is to utilize larger shuttle buses for the Red Line, with a redrawn route turning right on Elm Street and running up Church Street. Currently, the Red Line runs up College Street and turns right on Wall Street, which the large shuttle bus is unable to do.

The benefits of such a route change are numerous. Now that the Student Package Receiving Center has moved to 250 Church Street, drawing a shuttle route that includes a stop at this Center could prove extremely beneficial. Currently, there is no such stop. We believe that it could be in the interest of the University to adapt this route, as much of the activity on campus has shifted towards the new colleges.
RECOMMENDATIONS

1. Add a shuttle separate from the Red Line with the sole purpose of going back and forth between the New Colleges/Sterling Chemistry Laboratory and Old Campus.

2. Increase shuttle offerings after 6 PM. These nighttime shuttles could run approximately once every thirty minutes. For example: adding a Blue Night offering that runs the full route, from the Medical School to East Rock and back, would alleviate stress on students who work on Science Hill at night in laboratories.

3. Increase the size of Red Line shuttles to match increased student demand.

4. Adjust the Red Line’s route to accommodate a larger bus by utilizing Elm and Church Streets instead of College and Wall Streets.

5. Adjusting the Orange Line to continue going up York Street, then Ashmun Street, turning right on Lock/Canal Street, then turning left on Prospect Street (instead of currently turning right on Elm Street, then left on College/Prospect Street). This will maximize the use of limited Shuttle resources by reducing the amount of overlap between the Blue and Orange Lines.